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NORTH ATLANTIC WEATHER.

By MR. JAMES PAGE, Chief of the Division of Ocean Meteorology.

[Compiled from the daily observations, at Greenwich mean noon, furnished by cooperating observers at sea.]

The distribution of pressure over the North Atlantic Ocean at the instant of Greenwich mean noon of March 1 and the attendant circulation of the winds is shown on Chart X. Pressure is above the average over Iceland, 29.80 inches, and a marked anticyclonic area covers the eastern portion of the ocean and the western shores of the Continent of Europe. The latter feature of the pressure remained practically constant thruout the entire month, the minimum barometric reading at Ponta Delgada, Azores, during the period March 1–30 being 30.18 inches, recorded March 25, consequent upon a northward recession of the center of the high to the British Isles. Over the latter upon the same date readings of 30.40 inches and upward were recorded.

As a result of this special distribution of pressure the northeast trades blew thruout the entire month without interruption, extending in a continuous belt from the latitude of Cape Finisterre to the Line. At the entrance to the Channel and westward along the transatlantic routes as far as the meridian of 20° the winds blew almost continuously from the southwest quadrant, and fair weather prevailed. Upon one day only, viz, March 16, did these winds attain gale force, the result of a cyclonic storm central at the time in the vicinity of the Faroes, where the recorded pressure upon the date mentioned was 29.00 inches.

Over the western half of the ocean variations of pressure succeeded one another with marked rapidity, and as a consequence severe weather was the rule. The high central over New England yielded March 2 and was succeeded March 3 by a shallow low which extended eastward to mid-ocean. Upon this date the transatlantic routes between the meridians of 60° W. and 35° W. were accordingly visited by westerly gales, without, however, any decided change in the barometer. Pressure over Iceland fell from 29.50 inches on March 2 to 28.90 inches on March 5, with the result that vessels following the route north about Scotland experienced southwesterly gales of force 10 and 11 during this period.

On March 5 a feeble area of low pressure moved eastward across Hatteras and on March 6 was central with a well developed system of cyclonic winds in the neighborhood of 37° N., 66° W., the lowest recorded pressure being 29.30 inches. From this point it moved northeastward, developing into a hurricane during the early hours of March 7.

The distribution of pressure and the circulation of the winds at Greenwich mean noon of this date are shown on Chart XI, the storm at this hour being central in latitude 42° N., longitude 56 W. Of the large number of vessels which experienced the hurricane's severity, the *Pretoria*, (German S. S., Schröter, report by 3d officer Suppelna), appears to have most nearly approached the center. The vessel was bound from Hamburg to New York, and at Greenwich mean noon of March 6 found herself in latitude 41° 55′ N., longitude 53° 20′ W. The remarks of the observer from this time forward are as follows:

"At 2 p. m. of March 6 the wind went from west, 2, to the southward, and so continued until 3 a. m. of March 7, with heavy rain squalls; lightning and thunder covering the whole sky. The wind then shifted to WSW., force 11, and at 6 a. m. to W., force 12, with a heavy hail squall. The lowest barometer, 725.0 millimeters (28.54 inches), occurred at 2 a. m., the position at the time being latitude 41° 51′ N., longitude 57° 00′ W., and the wind south, force 11".

The *Brandenburg*, (German S. S., Woltersdorff, Bremen to New York, report by officer Jaehnigen), also found herself within dangerous proximity to the storm center, altho in the

opposite semicircle. The position of the vessel at Greenwich mean noon of March 6 was latitude 41° 19′ N., longitude 57° 51′ W.—about 180 miles, therefore, to the westward of the *Pretoria*. The shifts of the wind during the advance of the storm were ENE., 10; NNW., 11; WNW., 10. The observer reports: "Continuous violent rain until 2 p. m. of the 6th; a tremendous sea running, causing the ship to labor fearfully; the wind blows at times with hurricane force; at 6 p. m. the sea was so very boisterous that the ship had no steerage way; both engines were accordingly stopt; at 3 a. m. of March 7, the storm had abated sufficiently to allow us to resume our course; lowest barometer, 733 millimeters (28.88 inches), at midnight".

The center of the storm moved northward across Cape Race during March 8, and conditions were thence undisturbed until March 11. Upon this date another depression appeared in the neighborhood of 39° N., 65° W., and, moving northeastward, was followed by northwesterly gales in the region to the southward of Nova Scotia. This was followed by a period of quiet weather which terminated on the 19th. Upon the last-named date a low moved eastward from the Great Lakes and on March 20 was central over the Bay of Fundy, the barometer at Eastport, Me., reading at 8 a. m. 28.66 inches. Southerly gales of force 10 and 11 swept the transatlantic routes from the American coast to the meridian of 60° west. The center of the depression did not at any time come within the region of observation at sea.

On March 24 an elongated trough of low pressure extended southeastward from Cape Race to a point situated in latitude 35° N., longitude 40° W. On the western slope of this trough northwesterly gales of force 8 to 9 prevailed, covering a belt 300 miles in width. On the eastern slope southerly and southeasterly winds of force 6 were the rule, rising to force 8 thruout a limited area at the southern extremity. As the day advanced the axis of this trough assumed a more easterly direction, the trough itself at the same time increasing in depth, with the result that thruout March 25 the transatlantic routes from the longitude of Cape Race to the meridian of 30° W., were the scene of steady southwesterly and westerly gales of force 9 and 10.

On the 26th of the month a tropical depression made its appearance between Bermuda and Porto Rico, in which the *Epsom* (British S. S., Cox, Channel to Galveston, report by officer Williams) and the *Tampico* (British S. S., Westcott, Channel to New Orleans, report by officer Haworth) became involved on the 27th. According to the report of the former vessel the slow initial fall of the barometer which marks the approach of storms of this nature set in at noon of March 25. At 4 a. m. of the 26th, the barometer rose slightly and the wind became variable, finally settling in the northeast, while a heavy northwesterly swell at the same time made itself felt. The position of the vessel at Greenwich mean noon was latitude 33° N., longitude 69° W.; wind NE., barometer 29.44 inches. Fifteen minutes later a squall of wind heralded the break of the threatening gale from the north. Fierce squalls of hurricane force were frequent and a very high and dangerous sea soon rose. The hurricane continued to rage thruout the day, the barometer meanwhile rising, altho very slowly. At Greenwich mean noon of the 27th the position of the *Epsom* was latitude 30° 30′ N., longitude 63° 10′ W., wind N., 12; barometer 29.71 inches, weather overcast and squally. At 1 p. m. the sky cleared and the wind and sea soon moderated.

THE WEATHER OF THE MONTH.

By Mr. P. C. DAY, Assistant Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure for March 1907, over the United States and Canada is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and V.

During March, 1907, the distribution of the average pressure showed two well marked variations from the normal. Pressure averaged unusually low over all northwestern districts of the United States and Canada, and relatively high over all southern and eastern districts.

As a result of this reversal of pressure distribution, no high-pressure areas of any considerable magnitude moved southward from their usual source of origin over the Great Plains region east of the Canadian Rockies, and such cold waves as overspread the more northern districts were correspondingly lacking in severity.

On the other hand, the presence of unusually high pressure over the Gulf of California and adjacent territory and all southern and eastern districts forced the warm southerly winds of those latitudes far to the north of their usual limits.

Over the upper Missouri Valley and thence westward to the Pacific and northward over the Canadian Provinces the pressure was almost continuously below the average, while over southern California, Arizona, and New Mexico comparatively high pressure was the rule during most of the month.

Pressure also averaged considerably above the normal in all districts along the Gulf and Atlantic coasts. The entire region west of the Rocky Mountains, the Great Plains south of Nebraska, the lower Mississippi Valley, and the Gulf States were not within the direct influence of any considerable area of high pressure, having its origin in northern districts, during the month; on the other hand, no portion of the country was exempt from the influence of the numerous low areas which moved eastward from the Pacific.

TEMPERATURE.

The warm waves that overspread nearly all districts of the United States east of the Rocky Mountains from the 18th to 23d and from the 24th to 29th established new records at many points for both the highest monthly mean and the highest maximum temperatures ever recorded in March at the respective stations.

The abnormally warm weather during the above periods occurred in connection with marked depressions of the barometer in the central districts, but generally without the usual cloud formations and attended by little or no precipitation, which, with comparatively high pressure over the Gulf States and in the extreme Southwest, gave warm southerly winds and almost midsummer temperatures over the Great Plains, central valleys, and all eastern districts. Maximum temperatures far in excess of any previous March record, and in some sections higher than before recorded in any previous April or May, were recorded about the 23d, and again about the 29th.

The month as a whole was one of marked temperature excess over all portions of the United States, except the extreme eastern portion of Maine and over the Pacific coast districts.

Over practically all that portion of the United States from the Rocky Mountains eastward the average for the month exceeded the normal by more than 6° daily, and over the greater portion of the central Mississippi Valley region, Kansas, Oklahoma, and Texas the normal was exceeded by more than 10° daily.

Over the greater portion of the territory between the Rocky Mountains and the Mississippi Valley and south of Nebraska, the temperature has averaged continuously above the normal for the four months from December to March, inclusive. The average excess during that period over portions of Kansas, Oklahoma, Texas, Louisiana, and Arkansas, ranges from 7° to more than 10° daily.